AIRCRAFT ACCIDENT

PRELIMINARY REPORT

A 01/25

Air Accident Investigation Bureau (AAIB)

Ministry of Transport, Malaysia

Rotary Wing Helicopter Bell 206L4, Registration PK-ZUV

near Kg. Janda, Bentong, Pahang

on 06 February 2025

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AIR ACCIDENT INVESTIGATION BUREAU (AAIB)
MALAYSIA

REPORT NO.: A 01/25

OPERATOR	**: PT. ZAVERYNA UTAMA**
AIRCRAFT TYPE	**: BELL 206L4**
NATIONALITY	**: INDONESIA**
REGISTRATION	**: PK-ZUV**
PLACE OF OCCURRENCE	**: NEAR KG. JANDA, BENTONG, PAHANG**
DATE AND TIME	**: 06 FEBRUARY 2025 AT 1020LT**

This report contains statements of facts which have been determined up to the time of issue. It must be regarded as tentative and is subjected to alteration or correction if additional evidence becomes available.

The sole objective of the investigation is the prevention of accidents and incidents. In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of this investigation to apportion blame or liability.

All times in this report are Local Time (LT) unless stated otherwise. LT is UTC +8 hours.

INTRODUCTION

The Air Accident Investigation Bureau of Malaysia

The Air Accident Investigation Bureau (AAIB) is the air accident and serious incident investigation authority in Malaysia and is responsible to the Minister of Transport. Its mission is to promote aviation safety through the conduct of independent and objective investigations into air accidents and serious incidents.

The AAIB conducts these investigations in accordance with Annex 13 to the Chicago Convention, the Civil Aviation Act of Malaysia 1969, and the Civil Aviation Regulations of Malaysia 2016.

It is inappropriate that AAIB reports should be used to assign fault or blame or determine liability since neither the investigations nor the reporting processes have been undertaken for that purpose.

In accordance with ICAO Annex 13 paragraph 4.1, notification of the accident was sent out on 07 February 2025 to the National Transportation Safety Committee (NTSC) Indonesia as the State of Registration and the State of Operator, to the Transportation Safety Board of Canada (TSB) and the National Transportation Safety Board (NTSB) of the United States of America as the State of Design and Manufacture, and to the International Civil Aviation Organization (ICAO).

Unless otherwise indicated, recommendations in this report are addressed to the investigating or regulatory authorities of the State having responsibility for the matters with which the recommendations are concerned. It is for those authorities to decide what action is to be taken

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ABBREVIATIONS

AAIB	Air Accident Investigation Bureau
ATC	Air Traffic Controller
CAAM	Civil Aviation Authority of Malaysia
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CPL	Commercial Pilot License
CVR	Cockpit Voice Recorder
FDR	Flight Data Recorder
HLS	Helicopter Landing Site
hrs	hours
LT	Local Time
mins	minutes
MOR	Mandatory Occurrence Reporting
PIC	Pilot in Command
Sdn Bhd	Sendirian Berhad
SWP	Safe Working Procedure
TNB	Tenaga Nasional Berhad

SYNOPSIS

On 06 February 2025, a Bell 206L4 helicopter bearing registration number PK-ZUV operated by PT. Zaveryna, crashed while attempting to land in Bentong, Pahang. The accident occurred approximately at 1020 LT near a hot spring pool at Kg. Janda along the old Kuala Lumpur-Bentong road.

The helicopter had been engaged in aerial work for Tenaga Nasional Berhad (TNB) and had been operating in the area since 21 January 2025. On the day of the accident, it was returning to the landing site for refuelling when it lost control while hovering above the ground. The aircraft's skid partially made contact with the landing surface, causing it to topple and catch fire.

A member of the ground crew was tragically struck by the helicopter's rotor blades and instantly perished. Despite minor injuries, the pilot survived the crash.

The Aircraft Operator submitted a Mandatory Occurrence Report (MOR) to the Civil Aviation Authority of Malaysia (CAAM), followed by a notification of the occurrence submission to the Air Accident Investigation Bureau, Malaysia (AAIB), and an investigation team was dispatched to the crash site on the same day.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On 06 February 2025, a Bell 206L4 helicopter (PK-ZUV), wet-leased by MHS Aviation Berhad and operated by PT. Zaveryna, was scheduled for an aerial work flight near Bentong, Pahang.

At 0800 LT, the PT. Zaveryna crew arrived at Helicopter Landing Site 1 (HLS 1) for their daily briefing, which was scheduled at 0830 LT. The aerial operation involved transporting cargo loads to a designated drop zone, with each flight cycle taking approximately 25-30 minutes. On that day, PK-ZUV was assigned to cover Zone Foxtrot.

Below are the flight operations timeline and the flight tracks from PK-ZUV depicted in Figure 1:

0850 LT: PK-ZUV started up at HLS 2 (Bentong Fruit Farm).

0855 LT: Take-off from HLS 2 to HLS 1 for cargo pickup.

0857 LT: Picked up the first load (405 kg) and departed for the drop zone.

0925 LT: Returned to HLS 1.

0926 LT: Picked up the second load (405 kg) and departed.

0954 LT: Returned to HLS 1.

0955 LT: Picked up the third load (405 kg) and departed.

1025 LT: Returned to HLS 1 and made the last radio transmission: *“Landing at HLS 2 for refuel, then will call again before take-off.”*

Total Flight Time: 1 hour 35 minutes

Total Load Transported: 1,215 kg

Figure 1: PK-ZUV flight tracks on the day of the accident
(Source: Spidertracks)

Upon arrival at HLS 2 for refuelling, PK-ZUV descended to approximately 20 meters above the ground to release the cargo net sling. After releasing the sling, the pilot attempted to manoeuvre backwards to realign the helicopter with fuel drum barrels, which had been placed on the ground by the engineer. At this point, the helicopter was approximately 20 meters away from the fuel drums, which were positioned to its right with the engineer standing behind the barrels.

Realising the distance, the pilot attempted to adjust the position of the helicopter by air taxy sideways to the right. During this manoeuvre, the helicopter made an abnormal contact with the ground, resulting in a loss of control. Despite the pilot's attempts to recover, the helicopter tilted, overturned, came to rest in an inverted position on the ground, immediately engulfed in fire, causing total damage.

During the helicopter overturned, the main rotor blades struck the engineer on the head and instantly succumbed to the injury. However, the pilot escaped the ill-fated accident with minor injuries and was taken to the hospital for further treatment.

1.2 Injuries to Persons

Injuries	Crew	Passengers	Others	Total
Fatal	NIL	NIL	01	01
Serious	NIL	NIL	NIL	NIL
Minor	01	NIL	NIL	01
None	NIL	NIL	NIL	NIL

1.3 Damage to Aircraft

The tail boom section of the helicopter remained intact, however, the rest was destroyed by post-impact fire (Refer Figure 2).

Figure 2: Pictures of the destroyed helicopter

1.4 Other Damage

One of the two fuel drum barrels, with its cap already open, was damaged by the post-impact fire.

1.5 Personnel Information

1.5.1 Pilot

Status	Pilot in Command (PIC)
Nationality	Indonesian
Age	44 years old

Gender	Male
License Type	CPL 8050
License Validity	Valid (31 January 2026)
Aircraft Rating	BELL 206
Total Hours on Type	1010hrs
Total Flying Hours	4003hrs 50mins
Rest Period Since Last Flight	More than 8hrs
Medical Certificate Class	1 Limitations: holder shall possess glasses that correct for near vision
Medical Expiry Date	27 May 2025

The pilot was duly qualified and authorised to conduct the flight in accordance with existing regulations. Additionally, the pilot was medically fit and sufficiently rested to operate the aircraft.

However, the pilot had a prior accident in 2019 involving the same type of helicopter while operating under PT Carpediem Air's Fly Bali brand. The helicopter crashed near Lombok International Airport in Kawo Village, Central Lombok, Indonesia. The accident occurred while returning from a tour in Labuan Bajo, East Nusa Tenggara, following a suspected engine failure at approximately 500 meters altitude.

The investigation team attempted to obtain the final report of the aforementioned accident from the relevant investigative authority; however, the report has yet to be completed.

After experiencing two major accidents, the investigation team remains attentive to the pilot's health and well-being. As a precautionary measure, it is recommended that the company facilitate the pilot's consultation with an aviation medical professional to conduct a comprehensive mental and physical health evaluation, ensuring the pilot is fully fit to resume flying duties.

1.5.2 Engineer

Status	Engineer
Nationality	Indonesian
Age	27 years old
Gender	Male
AME License No.	12597
Date of Issue	02 April 2024
Type Rating	BELL 206 Series
Initial Date of Issue	02 April 2024

The engineer was duly qualified and authorised to conduct the ground duties in accordance with existing regulations. Additionally, the engineer was medically fit and sufficiently rested to work on that day.

1.6 Aircraft Information

Aircraft Type	Bell 206L4
Manufacturer	Bell Helicopter Textron
Year of Manufacturer	1995
Aircraft Owner	PT. Zaveryna Utama
Aircraft Operator	PT. Zaveryna Utama
Registration No.	PK-ZUV
Aircraft Serial No.	52151
C of R Validity Period	25 July 2025
C of A Validity Period	07 November 2025
Insurance Validity Period	07 November 2025
Total Flying Hours	7067 Hrs
Engine Type and Model	Rolls Royce Allison 250-C30 Series
Engine Serial No.	CAE-895821
Total Engine Cycle	8376 Cycle

The aircraft had a valid C of R and C of A, and it has been maintained in compliance with the regulations. The maintenance records indicated that the aircraft is equipped, and maintained in accordance with existing regulations and approved procedures.

1.7 Meteorological Information

The weather was fine when the accident happened. Nevertheless, the weather conditions on that day did not contribute to the occurrence of the event.

1.8 Aids to Navigation

Not applicable.

1.9 Communications

All communication frequencies were operating normally.

1.10 Aerodrome Information

There is no specific information regarding the aerodrome; however, the accident occurred on a designated landing site known as HLS 2. Given the presence of multiple helicopters and the associated operational hazards, the main contractor implemented a Safe Working Procedure (SWP) to ensure a secure and controlled working environment.

HLS 1, located at the Bentong Store, has limited capacity and is unsuitable for accommodating more than one helicopter at a time. Due to spatial constraints and the potential risk of collision, the SWP proposed an alternative site approximately 800 meters from HLS 1, the site then identified and designated as HLS 2 to facilitate the operation of additional helicopters. However, only 1 helicopter shall be allowed to take-off and land at one time. No simultaneous activities allowed at HLS 2.

An aerial view illustrating the locations of HLS 1 and HLS 2 is provided in Figure 3 below.

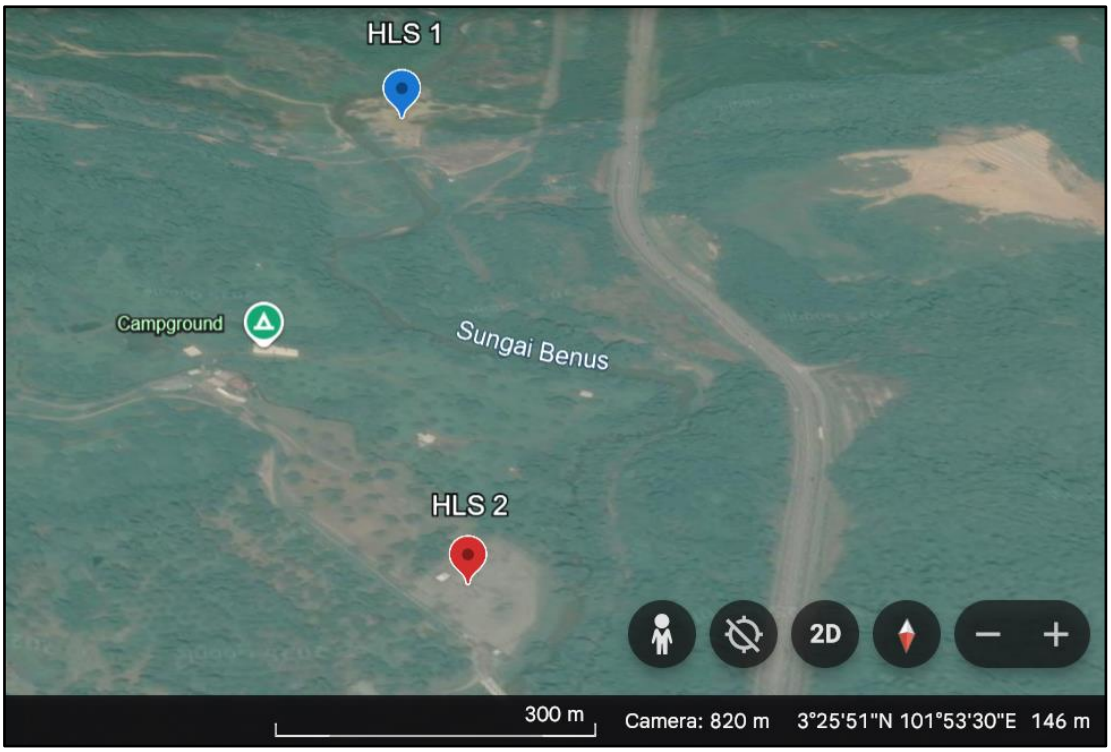

Figure 3: Location of HLS 1 and HLS 2
(Source: Google Earth)

1.11 Flight Recorders

The helicopter was not equipped with a Flight Data Recorder (FDR) or a Cockpit Voice Recorder (CVR).

1.12 Wreckage and Impact Information

Figure 4 below provides a general description of the site, the helicopter wreckage location, the last location of the victim, and the location of the underslung cargo net. The ‘broken yellow line circle’ indicates the helicopter wreckage location, the ‘red X’ is the last location of the victim, and the ‘broken orange line circle’ illustrates the location of the underslung cargo net.

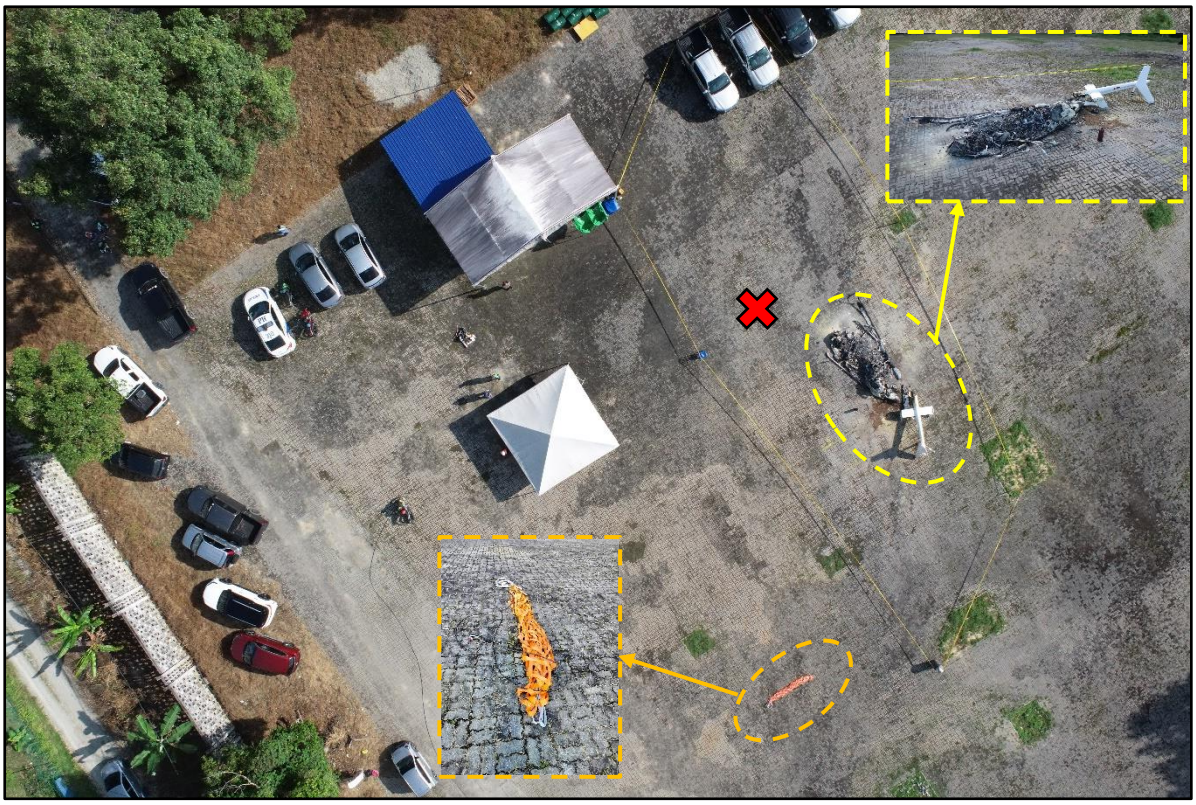

Figure 4: PK-ZUV general description map of the accident site and wreckage location

1.13 Medical and Pathological Information

The pilot underwent a urine drug panel screen and the results were negative for substance abuse. Where else for the blood alcohol screening, the result was within the normal limits**.**

The medical and pathological information of the victim will be included in the final report.

1.14 Fire

The helicopter was destroyed by a post-impact fire. The origin of the fire and the source of ignition remain undetermined.

1.15 Survival Aspects

To be included in the Final Report.

1.16 Tests and Research

To be included in the Final Report.

1.17 Organisational and Management Information

1.17.1 The Lessee (MHS Aviation Berhad)

MHS Aviation Berhad (the Lessee) is a Malaysia-based aviation company specialising in air transportation services for major oil and gas companies. Its core operations include providing helicopter services for private charters, search and rescue missions, emergency medical services, as well as training, engineering, and technical support.

The Lessee has been appointed by Trenergy Infrastructure Sdn. Bhd. - a contractor engaged by Tenaga Nasional Berhad (TNB) - to conduct external helicopter operations for TNB's transmission tower construction project (OHL 275kV/500kV from Point Z to Point M). As part of its responsibilities, the Lessee oversees and monitors flight operations to ensure compliance with its commercial requirements.

For this project, the Lessee has engaged two additional companies, PT Zaveryna Utama and Nomad Aviation PTE. Limited, under wet-lease[1] agreements. As the appointed contractor, the Lessee is required to comply with the protocols set by Trenergy Infrastructure Sdn. Bhd., particularly the SWP for Underslung Multiple Helicopter Operations and Hot Refuelling, which outlined the SWP for multiple underslung helicopters operation, hot refuelling and to determine the safety measures.

1.17.2 The Lessor (PT. Zaveryna Utama)

PT. Zaveryna Utama (the Lessor) is an Indonesia-based helicopter service company which had entered an agreement with the Lessee for the provision of a Bell 206L4 (PK-ZUV) helicopter to provide external load lifting services for the construction of transmission towers for TNB. Being the Lessor, PT. Zaveryna Utama shall:

[1] ***Wet Lease*** is an agreement between air operators pursuant to which the aircraft is operated under the AOC of the lessor. It is normally a lease of an aircraft with crew, operated under the commercial control of the lessee and using the lessee's designator code and traffic rights.

i) ensure the aircraft's flight monitoring system is operational during the term of the agreement and provide Lessee with login provisions to allow Lessee to track the movements of the aircraft;

ii) maintain sufficient insurance of the aircraft to cover aircraft hull and liability, hull war risk, passenger injury, and third-party liability;

iii) at all times during the operation period, provide Lessee with the latest aircraft journey log at the end of the day when the aircraft is utilised for this project;

iv) at all times have operational control over the aircraft.

1.18 Additional Information

1.18.1 Helicopter Hot Refuelling

Throughout this project, the helicopter operators are allowed to perform hot refuelling during the operation. Hot refuelling is the process of refuelling a helicopter while the engine is running and the rotor is rotating. The Bell 206L4 light helicopter requires hot refuelling due to operational demands and time-sensitive constraints.

This procedure inherently carries risks due to the presence of running engines, spinning rotors, and flammable fuel, making strict safety protocols essential. In light of these risks, Trenergy Infrastructure Sdn. Bhd. has issued a SWP (refer Figure 5) to the Lessee to ensure the safety of the refueler, the helicopter, and the surrounding environment while performing their tasks during hot refuelling.

As previously mentioned, part of the agreement requires the Lessee to oversee and monitor flight operations to ensure compliance with its commercial requirements. Therefore, it is their responsibility to ensure that the companies engaged under their contract adhere to these obligations.

1.4.1 Running engine and blades spinning

a) For light helicopter, hot refueling can only be done using fuel drum and manual pump. Refueling using bowser truck is not allowed due to the heights which increase the risk of being hit by the rotating blades
b) Refueling shall only be done by trained and experienced crew
c) When the helicopter is approaching for landing, the refueling crews shall wait at safe distance from landing point
d) Once the helicopter landed, the pilot shall ensure the engines are running at an appropriate RPM and the landing gear is locked to prevent movement during refueling
e) Refueling crews shall only approach the helicopter after receiving instruction (thumbs up) from the pilot
f) Refueling crew shall approach the helicopter from where the pilot is in view (front or side). Do not approach from the rear as there is a risk of being hit by the tail rotor
g) Refueling crew shall bow down and not raise up hand carrying refueling tools while approaching the helicopter
h) Stand on any object to gain height during refueling is strictly prohibited

Figure 5: Safety Working Procedure: Hot Refuelling

Based on video footage of PK-ZUV conducting hot refuelling a day before the accident (refer to Figure 6), it was observed that the crew from the Lessor did not adhere to the prescribed SWP for hot refuelling. Such non-compliance poses a potential risk and could lead to unsafe conditions.

Figure 6: PK-ZUV hot refuelling a day before

Figure 5, Paragraph 1.4.1 (c), (e), and (f) clearly define the SWP for conducting hot refuelling. However, as observed in Figure 6, the helicopter operator or the Lessor failed to adhere to these procedures.

The unsafe actions of both the pilot and the ground engineer introduced potential hazards. The helicopter was hovering with its rotor blades still running while moving closer to the ground engineer, who was positioned directly beneath the main rotor disc. This is a direct violation of paragraph 1.4.1 (c), which mandates that crew members must wait at a safe distance from the landing point.

Additionally, Paragraph 1.4.1 (e) states that the refuelling crew should only approach the helicopter after receiving a clear instruction (thumbs-up) from the pilot. However, as shown in Figure 6, the crew is already positioned beneath the helicopter while it is still hovering and approaching for landing, indicating a clear violation of this procedure.

When the Lessor fails to comply with safety regulations, it is the Lessee's responsibility to oversee and monitor operations to ensure adherence to established requirements. In this case, the absence of a Safety Officer from the Lessee at HLS 2 to supervise the hot refuelling process contributed to crew complacency, further increasing operational risks.

1.19 Useful or Effective Investigation Techniques

To be included in the Final Report.

2.0 ANALYSIS

To be included in the Final Report.

3.0 CONCLUSION

3.1 Findings

3.1.1 Pilot

i) The pilot was qualified and approved to perform the flight in accordance with existing regulations.

ii) The pilot was medically fit and adequately rested to operate the flight.

iii) Results for the urine drug panel screen test were negative for substance abuse and the blood alcohol screening test was within the limit.

iv) The pilot had a prior accident in 2019 involving the same type of helicopter

3.1.2 Aircraft

i) The helicopter is equipped and maintained in accordance with existing regulations and approved procedures.

ii) The helicopter has a valid C of A and has been maintained in compliance with the regulations.

iii) The maintenance records indicated that the helicopter is equipped, and maintained in accordance with existing regulations and approved procedures.

iv) The helicopter was not equipped with a FDR or a CVR.

v) The helicopter was destroyed by post-impact fire, however, the tail boom section of the helicopter remained intact.

3.1.3 The Lessee

i) The Lessee was appointed by Trenergy Infrastructure Sdn. Bhd. to conduct external helicopter operations for TNB’s transmission tower construction project.

ii) Responsible for overseeing and monitoring flight operations to ensure compliance with its commercial requirements.

iii) Having 2 HLS to facilitate the operation of additional helicopters.

iv) There is an absence of a Safety Officer from the Lessee at HLS 2 to supervise the hot refuelling activities.

3.1.4 The Lessor

i) Entered an agreement with the Lessee for the provision of a Bell 206L4 (PK-ZUV) helicopter for the construction of transmission towers for TNB.

ii) The crew did not adhere to the prescribed Safety Working Procedure for hot refuelling.

3.2 Probable Cause

To be included in the Final Report.

4.0 IMMEDIATE SAFETY ACTIONS

4.1 The Lessee (MHS Aerospace Berhad)

i) The Lessee shall ensure that a Safety Officer is present to oversee and monitor flight operations to ensure compliance with commercial requirements whenever activities are conducted at the site.

4.2 The Lessor (PT. Zaveryna Utama)

i) The Lessor shall facilitate for the pilot to undergo a comprehensive mental and physical health evaluation with an aviation medical professional to ensure fitness for resuming flying duties.

ii) The Lessor shall update the Company's Maintenance Manual (CMM) and Operations Manual – A to explicitly define the safe distance required for ground crew during helicopter approaches for landing during hot refuelling.

Other safety recommendations will be included in the Final Report.

Investigator-in-charge
AAIB
Ministry of Transport, Malaysia